POV.HD™ User Manual

Point-of-View Video Built for Action

POV.HD User Manual, v1.12

Contents

POV.HD

Shoot, Tag, Edit, Share

The POV.HD makes it easy to shoot great HD video, tag interesting shots while you're recording, edit videos on the recorder while in the field, and share your videos.

Everything inside the POV.HD recorder and camera head has been completely redesigned to capture the highest quality HD video, and the proven durability of the POV enclosures allows you to capture video just about anywhere you care to go. Dust, snow, water spray, shock, and vibration pose no threat to the state-of-the-art optics and electronics inside.

The modular system design allows you to mount the camera head almost anywhere—helmet, shoulder strap, roll cage, ski tip, power boat windshield, firearm, you name it, and a POV camera has probably been there.

Before you do anything else...

View the short video tutorials that are preloaded on the SDHC card that came with your POV.HD, or view them online by going to www.vio-pov.com/tutorials/ It's the easiest and fastest way to get started.

What's In The Box?

The POV.HD you purchased contains everything you need to take high quality HD video. The POV.HD is built on a modular design that allows you maximum flexibility in how you mount the HD camera head, which in turn makes it possible for you to optimize the video you capture for your intended purpose. The POV.HD doesn't dictate how you use it. You decide.

Wide Angle HD Camera Head with Tethered LVDS Cable

The camera head imaging system can capture video at 1080p and 720p at up to 60 frames per second. A six element, all glass lens provides a field of view up to 142º for 1080p video. Everything is encased in a rugged, heavy gauge aluminum body and bezel that are sealed against dust and moisture. The lens is protected against contamination by a sealed glass shield.

POV.HD Recorder

The camera head attaches to the POV.HD recorder via a 1.5 meter LVDS cable. The recorder controls recording and playback, supports advanced image enhancement and exposure controls, and provides a user interface for adjusting a wide range of system parameters. The recorder is enclosed in a sealed polycarbonate enclosure that protects it from impact and vibration that would prove deadly to other systems. Both the recorder and the camera head are rated at IP67 for protection against dust and moisture.

Wireless Remote Control

The wireless remote allows you to control recording or still photo capture without having direct access to the POV.HD recorder. This lets you get set up for recording, and then stow the recorder out of the way, up to 15 feet from where you'll be. The remote can be attached on your wrist, in your palm, on the handlebars or steering wheel, wherever it's easy to use while you're involved with other things. Like the camera head, the remote is sealed and rugged and ready for hard use.

Mounting Systems

One of the most powerful features of the POV.HD is that you can put the camera head where you want it to be. You can put it on your helmet if that's what you need, but you can also mount it on a snowboard, roll cage, a bike's front shock, or the windshield frame on a cigarette boat off-shore racer. Vibration, shock, sand, and water spray aren't going to hurt it. To put the camera head where you want it, you need to be able to mount it securely. The POV.HD comes with a Mini-mount kit that will meet a wide range of needs. Additional mount kits and individual mounts are available from V.I.O. for any special need you may have.

USB Cable & Analog A/V Cable

The POV.HD comes with two cables for connecting to other devices. The USB cable allows you to connect the recorder to a computer using USB 2 for uploading or possibly downloading video clips. The analog cable can be used to connect the recorder directly to a television receiver, allowing you to play your video on that receiver directly from the recorder.

Quick Start Guide & 4 GB SDHC Card with Preloaded Tutorials

The Quick Start Guide is a handy summary reference that fits in the POV.HD carrying case so it goes with you anywhere. The 4 GB SDHC card is used for storing video you record. It comes preloaded with video tutorials which can be viewed on the recorder or uploaded onto a computer for viewing there. These tutorials can also be downloaded from the V.I.O., Inc. web site at
 www.vio-inc.com/tutorials .

Carrying Case

Everything in the box fits inside the compact, heavy gauge nylon carrying case.

Get Ready

The POV.HD is shipped with everything you need to start making great videos in HD, but a bit of assembly is required before you get started.

Watch the video tutorials

The POV.HD comes preloaded with video tutorials that demonstrate all the most important aspects of setting up and using your POV.HD.

    a.   To view the tutorials on a computer you can upload them from the SDHC card included with the POV.HD, or you can access them directly from the V.I.O., Inc. website at www.vio-inc.com/tutorials .
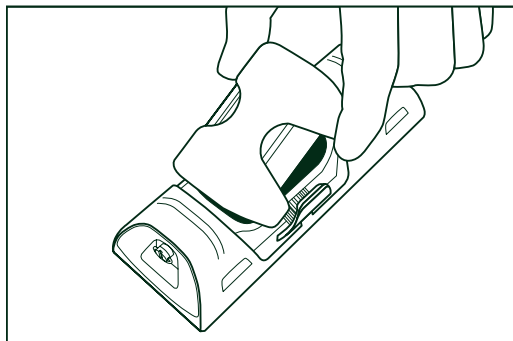
> The tutorials are the only files on the SDHC card when you receive it. The tutorials follow the standard POV.HD video file name convention which doesn't tell you which is which, but as you preview the tutorial videos, the LCD on the recorder will display the name of each tutorial.

    b.   To view the tutorials on your POV.HD recorder, set up the recorder as shown in the next step, below, then play the tutorials, as shown in **Previewing Video on the Recorder**.
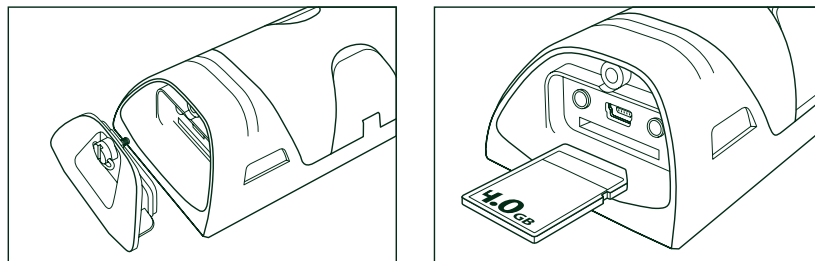
Set up the POV.HD recorder

    1.   Install the 4 AA batteries included with the POV.HD in the recorder.

- Turn the recorder over and unlatch the two battery cover clamps.
- Remove the cover and install the batteries.
  Because of the seal, the hatch may stick slightly. This is normal. Excessive force is not required. Check to see that the clamps are unlatched if it feels too tight.
- Replace the cover, and snap the latches back into place.

2. Remove the Input/Output cover from the bottom of the recorder, and install the SDHC card included with the POV.HD.

   - Unscrew the retaining screw.
   - The Input/Output cover has a snug, water-tight fit. To remove the cover, use a coin or small flat bladed screwdriver to pry at either of the two arrows on the cover. **DO NOT** try to remove the cover by pulling on the retaining screw.
   - Insert the SDHC card into the card slot, until the card latches. If the recorder has been placed face down as shown, the SDHC card label will face upward when it is inserted correctly.
   - Note that the SDHC card has a beveled corner on the leading edge. If you insert the SDHC card upside down, the square corner will prevent the card from being fully inserted. **DO NOT** force the card. If it will not go all the way into the slot, remove the card and make certain the label is visible and the beveled corner is to the right.
   - To remove the SDHC card when it is latched, push the back edge of the card slightly and it will unlatch and project out a short distance. It can then be pulled out. There is a small notch on the outer edge of the label side of the SDHC card that allows you to use a finger nail to slide the card out after it is unlatched.
   - Replace the Input/Output cover and tighten the retaining screw finger tight.

   Note: The POV.HD comes with a 4 GB SDHC card. The POV.HD can use SDHC cards up to 32 GB maximum.

3. Protect the recorder's LCD screen

   To help protect the POV.HD recorder's LCD screen from scratches the POV.HD comes with an LCD protective cover, which is a small plastic sheet that is used to cover the screen.
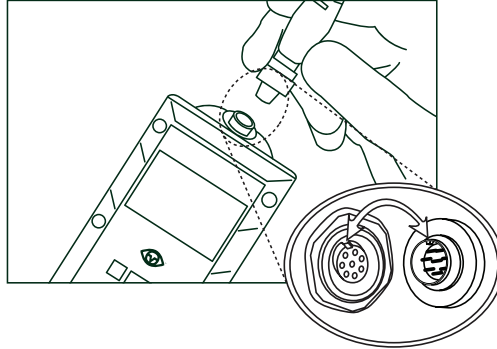
   To install the LCD protective cover:

   - The POV.HD is shipped with a temporary plastic film that protects the screen during manufacture and shipping. If this is still on the unit remove it.
   - Make sure the LCD screen is clean and free of any dust, smudges, fingerprints, and goo.
   - Peel the paper off the back of the film and position the plastic sheet over the LCD screen and press it down to secure it.
   - Use your finger to smooth out any air bubbles that may be trapped under the cover.

Attach the camera head to the recorder

Please watch the Camera Head Cable Connection tutorial before connecting the camera head to the recorder.

1. Attach the camera head to the recorder by inserting the camera head's tethered cable into the connector at the top of the recorder, and securing the connection by turning the knurled metal ring to screw in the connector. Firm, finger-tight is the correct tightness.

> ⚠️ **IMPORTANT**: When attaching the cable, align the key on the cable connector with the slot on the recorder connector. When properly aligned, the cable connector should seat into the recorder connector until the threads on the cable connector are flush against the camera connector and turning the knurled metal ring will thread the connector into the recorder.
> If the cable doesn't seat properly, pull the cable back and try again. Use only gentle pressure for final fitting of the key into the slot.

> ⚠️ **IMPORTANT**: When connecting and tightening the cable, turn the knurled metal ring on the cable connector. **NEVER** twist the cable itself to tighten it.

Check the recorder and camera head

1. Press the **Power** button on the recorder and hold for 1-2 seconds until the LED turns from orange to red. The recorder will take a few seconds to boot up.

2. When the recorder is ready, the LCD will show what the camera head is viewing, and the upper left corner of the LCD will display the word "Standby", indicating that it is ready to record.

3. If you see the preview from the camera head and the recorder displays "Standby", everything is working as it should.

Possible issues:

a. The recorder won't power up:
   - Are there batteries in the recorder? Don't be offended, it's happened to all of us.

b. When the recorder powers up, the LCD displays the message "No camera detected"
   - The camera head cable may not be connected or it may not be seated properly. If the camera head appears to be attached, remove the cable completely, and try connecting again.
   - If you press the power up button and release it quickly (before the LED changes to red) the recorder will not power up. If you then press and hold the power button and start a normal power up, the recorder may fail to detect the camera head. In this case a message will be displayed instructing you to power down the recorder by pressing the Power button, wait five seconds , and then power up again. This should correct the previous error condition.

c. The camera comes up correctly, but no image is displayed on the LCD.
   - Check to see that the camera head view isn't blocked. If it's under or behind something, or you stuck it in your pocket, there may be nothing to see.
   - Disconnect the camera cable and check to see that all the pins in the camera head cable connector are straight and evenly spaced. Then reconnect the cable. It is not necessary to power down the recorder to disconnect and reconnect the camera head.

Set the System Time and Date

The time and date must be set in the recorder (one time only) so that video clips, still photos, and other files will be correctly labeled.

1. Press the **Settings** button to go to the settings.

2. Navigate to **Time and Date** using the << and >> soft keys.

3. When you reach the **Time and Date** menu, press the **Select** soft key.

4. The time and date are set one digit at a time. The **∧** soft key increments the current digit (colored red), and wraps at 9 to begin again at 0. The **>** soft key moves to the next digit to the right, and wraps to the beginning after the last digit.

5. When the time and date are correct, press the **Save** soft key to store the time and date.

6. Press **Play** to enter **Play-Preview** mode**.** "Play" is displayed in the upper left of the LCD.

NOTE: The system time and date will be cleared and you will need to set the time and date again using this procedure, if:
   - You do not power down the recorder before removing the batteries, or
   - You remove the batteries and do not replace them within 1 hour.

Check the wireless remote

1. If the recorder is not in Record Standby mode ("Standby" displayed in the upper left of the LCD), press **REC** on the recorder to go to Record Standby mode..)

2. With the recorder powered up and in Standby, and with the wireless remote within 5 feet of the recorder, press **REC/TAG** on the remote.

3. The recorder should start recording. The word "Clip" will appear in the upper left corner of the LCD, the upper right corner will be counting up the seconds that indicate the length of the recording, and the LCD will show what is being recorded.

4. Press **STOP** on the wireless remote.

5. The recorder should stop recording and return to Standby.

If the wireless remote does not start and stop the recorder:
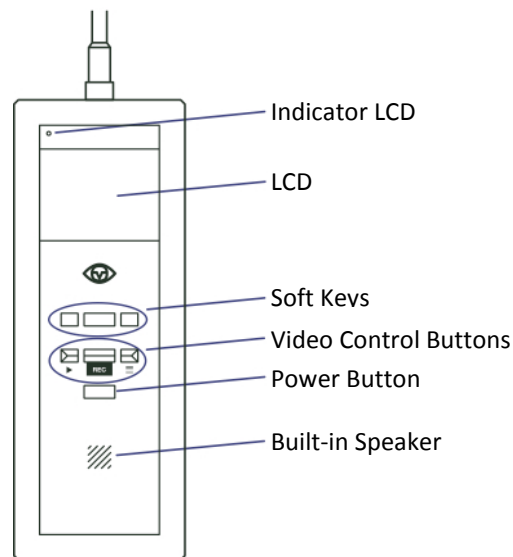
a. Move the remote closer to the recorder and try again.

b. Check to see that the recorder is in Standby. The word "Standby" should appear in the upper left corner of the LCD. If the recorder is powered up but not in Standby:
   - If the words "Still Photo" are displayed in the upper left of the LCD, you have left the recorder in Still Photo. Go to the Settings menu and set the **Record Method** to **Clip**. See **Settings** below for instructions on how to do this.
   - Otherwise, press the **REC** button. If you are not in Standby or Still Photo, this will return you to Record Standby.

c. Go to the Settings and check that the **Remote Control ID** is set to **0** (zero). If it is not, reset it to **0**. The recorder is shipped with the **Remote Control ID** set to the default value of **0** to match the channel setting in the wireless remote as shipped. However, if the Remote Control ID has been changed for any reason, it will remain changed even if the recorder is powered down, so it if there is a problem with the wireless remote, it is always a good idea to check the recorder **Remote Control ID** setting.

> The wireless remote will work up to 15 feet from the recorder, but to see that it's working properly, it's best to have it close to the recorder to eliminate the possibility of it being out of range or subject to unsuspected interference.

Your POV.HD is now ready to go.
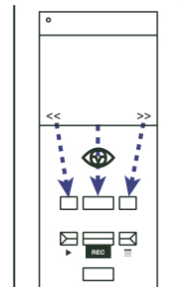
Using the POV.HD

Recorder buttons and soft keys

Soft keys

The functions of the soft keys change with the operating mode of the recorder. At any given time the function of each soft key is indicated at the bottom of the LCD. In the example here, which is from the **Settings** menu, the left key goes back one setting, the center key selects the current setting, and the right key goes forward one setting.

Video control buttons

The **Play** button selects Play mode and starts and stops playback of clips on the recorder.

The **Record** button selects Record Mode and starts and stops recording. When shooting still photos, the record button takes a picture.

The **Settings** button selects Settings mode and opens the settings menu.

Power up/Power down

The **Power** button turns the recorder on and off. To power up the recorder, press the **Power** button and hold for 1-2 seconds until the LED turns from orange to red. The recorder will take a few seconds to go through its power up sequence, and when it has finished, it will be in Record Standby mode.

To power down the recorder, press the **Power** button. If you are recording a video clip or if Keylock is enabled, and you press the Power button, the recorder will not power down. You must first stop recording or disable Keylock and then press the Power button again. This ensures that you will not corrupt the current clip by accidentally powering down.

Keylock

The POV.HD has a key lock feature that disables all keys and buttons on the recorder. Whenever "**Keylock**" appears in the lower left corner of the LCD, the **Keylock** feature can be turned on.

To turn on **Keylock**,

- Press the left soft key
- The right soft key is then labeled "Yes", the left soft key is labeled "No".
- Click **Yes** to lock the keys, or click **No** to cancel **Keylock**.
- The left soft key is now labeled "Unlock".

With Keylock on, all keys and buttons, including **Power**, are disabled. If you're going to stash the recorder in your pack, in your pocket, under the seat, or just about anywhere else while recording, it's a good idea to turn Keylock on.

To turn Keylock off,

- Press the left (**Unlock**) soft key.
- The right soft key will now be labeled ">", and the message "Press > to unlock" is displayed.
- Press >.
- The message "Exit Keylock" is displayed, the right soft key is labeled "Yes", and the left soft key is labeled "No".
- Press **Yes** to release the locked keys. Press **No** to cancel unlocking.

Multiple key presses are required to release Keylock to prevent the the recorder keys and buttons from accidentally being enabled if the recorder is dropped, gets bumped, or is bouncing around. It's always best to secure the recorder, but, well, things happen.

Operating modes

The POV.HD operates in several different modes, depending upon the function being performed. Because this manual refers to these modes frequently, it's worthwhile to review what they are and what they're used for.

Record Mode is for recording video or still photos or for setting up the recorder prior to recording.
Play Mode is for selecting and playing back video clips on the SDHC card.
Settings Mode is for reviewing or adjusting the POV.HD settings.
File Transfer Mode is for uploading files to a computer via the USB port.
Video Edit Mode is for running the built-in editing functions.

Other than knowing that they exist, the important thing to know about operating modes is that the POV.HD can operate in only one mode at a time. This means you cannot adjust settings while recording or view video clips while compiling a highlight clip.

File names on the POV.HD

Files containing video made with the POV.HD are referred to as clips. Raw clips, that is clips that are the direct result of recording video with the POV.HD are named using the date and time at which the recording started.

For Example:

```
2010 Jun 03 11h 03m 18s.mp4
```

Date clip was made   Time at which clip started   MPEG4 file extension

These file names are used for video clips recorded using all of the POV.HD **Record Methods**, including Still Photo.

> ℹ️   Still Photos are recorded as JPEG's and use the file extension .jpeg.

Files containing video created by the POV.HD on-board editing functions have names that are based on the file name of the clip file that was used to create them.

Tag clips created by **Save Tags** use the source clip file name with a five digit number added at the end. This number is the number of seconds after the start of the file at which the tag was made.

For Example:

```
2010 Jun 03 11h 03m 18s_tag_00247.mp4
```

Date clip was made   Time master clip   This clip is a tag clip   MPEG4 file extension
                      was made   made at 247 sec (4 min 7 sec)
                                          into the master clip

Highlight clips have the word "highlight" appended to the source file name.

For Example:

```
2010 Jun 03 11h 03m 18s_highlight.mp4
```

Date clip was made   Time master clip   This clip is a highlight   MPEG4 file extension
                        was made   clip

Record video

The basics

1. When the POV.HD boots up, it goes to Record Standby automatically. If you have been reviewing clips, using settings or for some other reason are not in Record Standby, push **REC** once to get to Record Standby.
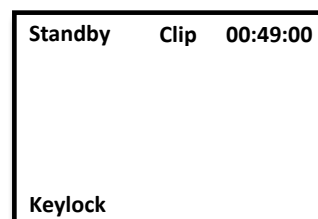
   The LCD will show a preview of whatever is being captured by the camera head, with this overlay.

   Standby indicates that the recorder is in Record Standby mode.

   Clip indicates that the **Clip Record Method** will be used for recording. See **Record Methods** below for more information about available **Record Methods**.

   49 min is the estimated recording time remaining on the SDHC card

   Keylock is used to lock the keypad. See **Keylock** above for more information.

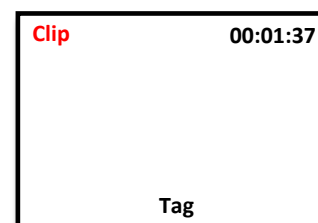| Standby	Clip	00:49:00
Keylock		

2. To begin recording, press the **REC** button on the recorder.

   The LCD will show the video being recorded.

   The **Record Method** being used for this recording is indicated in red in the upper left. The Clip method is being used in this example. See **Record Methods** below for more information.

   The upper right indicates the elapsed time of the recording.

   The **Tag** soft key, indicated by the label in the bottom center, allows you to add a tag to the clip being recorded.

Clip	00:01:37
	Tag

3. To tag the clip being recorded, press the **Tag** soft key.

   A tag is a time marker on a clip, similar to a bookmark in a document. Tags are added to a clip by

   pressing the **Tag** soft key on the recorder, or the **REC/TAG** button on the wireless remote. Tags are used by the built-in editing software. See **In-field Editing**, below for more information.

Record methods

The POV.HD supports 4 **Record Methods**. A complete discussion of what each **Record Method** does as well as guidelines for selecting the right **Record Method** is provided in **Understanding the POV.HD Video Record Methods**, below**.**

Clip records video like a standard video recorder. Once you start recording, video is captured continuously until you stop recording or the SDHC card is full.

Loop records a short clip every time you press **TAG** (or **REC/TAG** on the remote). The saved clip, referred to as a loop, includes action immediately before you press **TAG**, as well as action immediately following.

Loop & Forward records no video until you press **TAG** (or **REC/TAG** on the remote) for the first time. Then a loop is captured and all action following that first tag is captured as well.

Still Photo captures digital photos as JPEG's.

To set the **Record Method**, use the **Settings** menu.

When you use the **Loop** or **Loop & Forward** methods, **Loop Record Time** determines the length of the saved video loops. The actual length of a saved loop is never less than the **Loop Record Time**, but it can be longer.

See **Understanding the POV.HD Record Methods** for additional information about how the POV.HD determines how much video to save in order to ensure that you capture the action immediately before and immediately after each tag.

To set the **Record Method**, use the **Settings** menu.

Record using the wireless remote
The POV.HD allows you to control recording and set tags on a video clip without accessing the recorder. This allows you to stow the recorder in an out-of-the way place while recording. It also allows you to place the recorder and camera head up to 15 feet from where you are.

The wireless remote operates on any one of 10 frequency channels which allows multiple POV.HD's and POV.1 series devices to operate in the same vicinity without interfering with each other.

The wireless remote comes set for channel 0 and the recorder is set to receive channel 0 as well. Unless you need to operate in the vicinity of other POV systems, there is no reason why this needs to be changed. If you do need to change the wireless remote communication channel, refer to **Changing the Remote ID Channel**.

Record still photos

1. In **Settings**, change the **Record Method** to **Still Photo**.

2. Press the **REC** button on the recorder. As for any other **Record Method**, Standby will be displayed in the upper left, and "Still Photo" will be displayed in the top center of the LCD. The LCD will show the through-the-camera preview.

3. To capture a still photo, press either the **REC** button or the **Save** soft key. "Still Photo" will appear briefly in place of "Standby", and the captured still photo will be displayed on the LCD for approximately 1 second.

4. When the recorder is in **Still Photo Standby**, you can capture still photos using the wireless remote as well. Every time you press **REC** on the recorder or **REC/TAG** on the remote another still photo is captured.

> When you set the **Record Method** to Still Photo, it remains in Still Photo until you change it using the Settings menu. If you power down, the recorder will be in Still Photo Standby when it is powered up. If you leave Record mode, the recorder will return to Still Photo Standby when you press the REC button.

Preview video on the recorder

Select a video clip

You can preview your video clips on the recorder. Previewing your clips lets you see that your videos are looking as you want them and make any adjustments that might be necessary. It also lets you delete any unwanted clips to free up space on the SDHC card.

1. To get into **Play** mode, press the **Play** button. The word, "Play", will be displayed in the upper left.

2. In **Play – Preview**, you can cycle through the video clips that are on the SDHC card and play any that you select. The video plays on the LCD and the audio plays through the built-in speaker.

3. In the example display of **Play - Preview**,

   12/16 indicates that you are looking at the 12th clip out of a total of 16 on the SDHC card.

Play	12/16	00:13:02
Previous	**Delete**	**Next**

   00:13: 02 indicates that the current clip is 13 minutes and 2 seconds long.

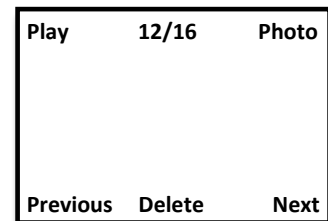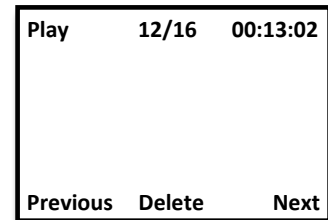   The soft keys **Previous** and **Next** allow you to cycle through the stored clips.

   Pressing the soft key, **Delete**, will require a **Yes/No** confirmation and then, if **Yes**, will delete the current clip.

   The first frame of each clip is presented on the LCD when it is the current clip.

   If there are still photos on the SDHC card, they will be displayed as well. Clips and still photos are displayed in the order in which they are recorded, so clips and still photos are mixed together in the sequence you preview them. When a still photo is displayed, "Photo" appears in the upper right corner in place of the clip length.

Play	12/16	Photo
Previous	**Delete**	**Next**

   If there are highlight clips on the SDHC card, each highlight clip is displayed immediately before the clip on which it is based. Highlight clips are not distinguished from other clips on the SDHC card.

   If you have run Save Tags, you cannot preview the tag clips on the recorder. The tag clips must be uploaded to a computer to be viewed.
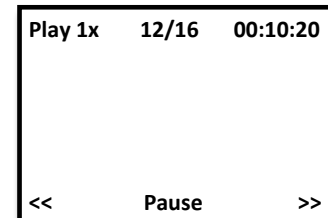
Play a video clip

To play a video clip you have located, press **Play** with the first frame of that clip showing in the LCD. The clip will begin playing at normal speed.

Press the >> soft key to run the clip faster, or to skip ahead.

Play 1x	12/16	00:10:20
<<	**Pause**	**>>**

- When running the clip at normal (1x) speed, pressing **>>** changes to 2x..
- When running at 2x, pressing **>>** changes to 4x.
- When running at 4x, pressing **>>** jumps to the next tag, if one exists. If there is no tag past the current position, the clip jumps ahead 1 minute for each press of the >> key.
- When you jump to a tag, play resumes from that point at normal (1x) speed.
- When you jump ahead 1 minute, play continues at 4x.
- When running at 4x or 2x, press the **Play** button to return to normal speed

Press the << soft key to run the clip slower, or jump backward.

- When running at 4x, pressing **<<** changes to 2x.
- When running at 2x pressing **<<** changes to 1x.
- When running at 1x pressing **<<** jumps back to the previous tag, if one exists. If there is no tag prior to the current video position, the clip jumps back 1 minute for each press of the **<<** key.
- When you jump backward to a tag or by 1 minute intervals, play resumes from that point at normal (1x) speed.

When playing at normal (1x) speed, press the **Play** button to stop play and return to **Video Clip Select**.

In-field editing

In-field editing provides a capability for editing your raw videos in the recorder. In-field editing is based on the tags you put on video clips while they are being recorded. The tags serve as markers indicating what parts of the clip are of the most interest. Using the **Loop Record Time** to determine how much footage is saved around each tag, the built-in editing functions cut out a clip at each tag, and save those tags in a separate directory.

Any clip with tags on it is referred to as a **tagged clip**.

Save Tags

When you use **Save Tags** on a tagged clip, a new clip, called a **tag clip** is created for each tag on the clip. The length of each clip is equal to the **Loop Record Time**. Half of the clip is the footage prior to the tag and the other half is the footage following the tag.

When **Save Tags** runs, it creates tag clips for all of the tagged clips on the SDHC card.

All of the tag clips from all tagged clips are saved in a single subdirectory called "Tags". The tag clips are associated with their original tagged clips by their file names, as described in the previous section.

Compile Tags

When you use **Compile Tags** on a tagged clip, a new clip is created that appends segments from all of the tags on the original clip into a separate **Highlight Clip**.

When **Compile Tag**s runs, it creates a highlight clip for each tagged file on the SDHC card. When you preview clips using Play, a highlight clip is displayed immediately before the clip on which it is based. When you see a clip that had tags in it, go back one clip and you will be on the highlight clip created by Compile Tags.

When clips are uploaded to a computer, highlight clips are identified by "_highlight" appended at the end of the file name, as described in the previous section.

You access **Save Tags** and **Compile Tags** in the **Settings** menu. Either of these features may take many minutes to run. While they are running, they display the current status of their processing on the LCD.

In the example, Save Tags is currently processing clip 6 out of 8 total, and is creating tag clip 3 out of 5 total on clip #6.

For more information on how **Save Tags** and **Compile Tags** work and tips on how to use them most effectively, see **Using the Built-in Editing Features**, below.
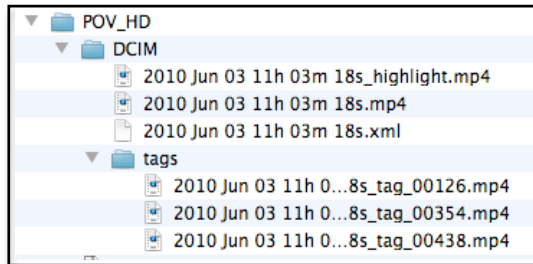
Settings
Save Tags **Processing Video 6/8** **Tag 3/5**

Uploading video clips and still photos to a computer

There are two ways to get files from the SDHC card in the POV.HD onto a personal computer.

1. Remove the SDHC card from the POV.HD recorder and use a flash card reader attached to your computer.

2. Connect the POV.HD recorder to a USB port on your computer using the USB cable provided with the POV.HD, and upload the files directly to the computer from the recorder.

When uploading files by either method, you need to be aware of the folder structure used by the POV.HD. The example below shows this structure.

```
▼ 📁 POV_HD
    ▼ 📁 DCIM
         📹 2010 Jun 03 11h 03m 18s_highlight.mp4
         📹 2010 Jun 03 11h 03m 18s.mp4
         📄 2010 Jun 03 11h 03m 18s.xml
      ▼ 📁 tags
           📹 2010 Jun 03 11h 0...8s_tag_00126.mp4
           📹 2010 Jun 03 11h 0...8s_tag_00354.mp4
           📹 2010 Jun 03 11h 0...8s_tag_00438.mp4
```

*   ***POV_HD*** is the volume label for the SDHC card containing the files. This volume label is on the SDHC card provided with the POV.HD. If you format that card or use a different card, the volume label will appear as "Unknown Device", unless you have set the volume label to some other text using a computer.
*   ***DCIM*** is the name of the directory in which all video and still photos are stored.
*   ***tags*** is the name of the subdirectory in which tag clips created using Save Tags are stored.
*   ***2010 Jun 03 11h 03m 18s.mp4*** is the name of a video clip made with the POV.HD
*   ***2010 Jun 03 11h 03m 18s_highlight.mp4*** is the name of a highlight clip that was made from 2010 Jun 03 11h 03m 18s.mp4.
*   ***2010 Jun 03 11 03m 18s.xml*** is the XML file that contains the tag information for the clip file.
*   ***2010 Jun 03 11h 03m 18s_tag_00126.mp4*** and the other similarly named files in the tags subdirectory are tag clips made using Save Tags.

Details about POV.HD file naming conventions are given in **File Names on the POV.HD**, above.

Note: This illustration shows the file structure. The order of the files in each folder depends on the operating system and your preference settings.

Upload and/or delete files using a flash memory card reader:

*   Make sure the POV.HD is not recording video. Removing the SDHC card while recording will cause the entire clip to be corrupted. When the recorder is powered down and then powered back up, the internal logic will discover the corrupted clip and attempt to repair it, but a successful repair is not guaranteed. The best policy is to be sure you're not recording when you remove the SDHC card.
*   Remove the SDHC card from the recorder and put it into the card reader.
*   Use the regular procedures for uploading and/or deleting files using your reader.
*   When you have finished, remove the SDHC card from the reader and reinstall it in the recorder.
*   ***Note:*** If you are using a Mac, when you delete files, you must be certain to also empty the trash. On a Mac deleted files are left in place and marked as being in the trash. Empty Trash is required to physically remove the files from the SDHC card.

Upload and/or delete files using a USB connection:

- If the POV.HD recorder is powered down, power it up.
- Connect the recorder to a USB port on the computer using the USB cable included with the POV.HD, or any standard USB 2 cable with compatible connectors.
- The LCD will display "USB Connection Detected, Enter USB Mode?" indicating that you are linked to a computer via USB. The left soft key is labeled "USB Mode", and the right soft key is labeled "No".
- Select **USB Mode** to connect to the computer via USB. While in USB Mode, the recorder cannot be used for any other function.
- On a Mac, the recorder will appear in the Finder as an external drive.
- On a Windows PC, in Windows Explorer, the POV.HD will appear as a removable disk under My Computer.
- Once the recorder is connected to your computer, you can transfer files from the recorder to your computer, or delete files on the SDHC card in the same way you would transfer or delete files on any external drive such as a CD, DVD, or backup drive.
- ***NOTE***: If the SDHC card has no label, it will appear in the Finder or Windows Explorer as "NO NAME", "UNKNOWN DEVICE", or something similar. If the SDHC card has a volume label, that label will appear as the name of the device. The SDHC card provided with the POV.HD is formatted with the volume label "POV_HD".
- ***Note:*** If you are using a Mac, when you delete files, you must be certain to also empty the trash. On a Mac deleted files are left in place and marked as being in the trash. Empty Trash is required to physically remove the files from the SDHC card.

Once the video files are on your computer, they can be treated like any other video files.

- They can be viewed using any suitable video player that runs on your system.
- They can be edited, compiled, and/or resized into your own custom videos.
- They can be burned onto CD's or DVD's.
- They can be uploaded to YouTube or any other video sharing site on the Internet.

Delete video clips and still photos from the recorder

You can delete video clips and still photos from the SDHC card without removing the card or connecting to a computer

Delete video clips and still photos using the recorder

To delete clips on the recorder, the recorder must be powered up and in **Play Preview** mode.

- If the recorder is not powered up, press the power button for 1-2 seconds to power it up.
- If the recorder is not in **Play Preview** mode, press Play.
- Use the clip selection soft keys **Previous** and **Next** to navigate to the clip or still photo you wish to delete.
- Press the **Delete** soft key to delete the selected clip or a still photo.
- The message "Do you want to delete the selected recording?" will be displayed.
- Press the **Yes** soft key to confirm your action and delete the clip or still photo. Press **No** to keep the clip or still photo and cancel the delete.

Note: You cannot access tag clips directly on the recorder, but if you delete a clip on which Save Tags has been run, the associated tag clips are deleted as well. Tag clips for other clips are not affected.

Note: If you delete a clip that was used to create a highlight clip, that original clip will be deleted, but the highlight clip will be preserved. In other words, if my make and tagged clip and then run Compile Tags on that clip to generate a highlight clip, you can delete the tagged clip and keep only the highlight clip.

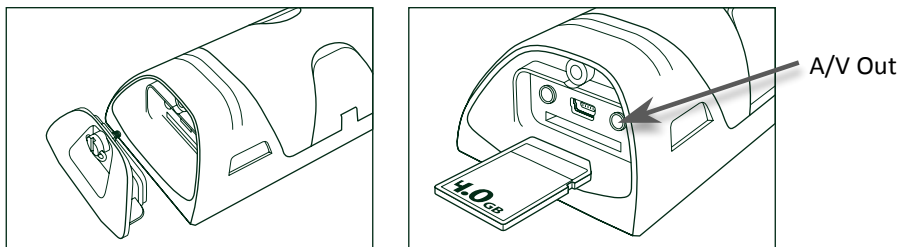## Play video clips directly from the recorder to a TV or personal computer

You can play clips that are on the SDHC card in the recorder on a television set or on a personal computer.

Play clips on a television set
Playing clips on a television set works the same as playing video from a DVD or Blu-Ray player, or any other video device that provides a composite video signal. The output from the POV.HD recorder is NOT digital. It is a composite signal that is compatible with both digital TV and older analog sets.

The A/V cable required to connect the recorder to a television set is included with the POV.HD.

- If the recorder is powered down, power it up.
- In Settings, go to 17/Video Output and choose the output encoding format: NTSC or PAL. NTSC is used in television sets in most of North America, most of South America (except Brazil, Argentina, Uruguay, and French Guiana), Burma, South Korea, Taiwan, Japan, the Philippines, and some Pacific island nations and territories. PAL is used elsewhere in the world.
- The A/V port on the recorder is located under the SDHC card cover at the base of the recorder. Remove the cover by loosening the retaining thumbscrew and prying the cover lose. DO NOT use the thumbscrew to pull the cover free.
- With the recorder resting LCD side down as shown in the illustration, the A/V out port is located above the SDHC card slot and to the right. It's labeled "A/V Out".

- Plug the single, black, 1/8 in mini phono jack into the A/V Out port on the recorder.
- Plug the white (audio) and yellow (video) RCA connectors on the other end of the cable into the receptacles of corresponding color, on the television set. See the instructions for your television to determine how to connect a composite-video signal input to your set.
- If the television is not on, turn it on, and set it to the channel your set uses for viewing input from the composite-video port.
- On the POV.HD recorder, press Play to enter Play Preview. Navigate to the clip you want to view, and press play to start the clip.

Note: The composite video signal does not automatically adjust the aspect ratio for display on an NTSC receiver and may not do so on a PAL receiver. If the video output appears squashed use the controls on your television set to set the aspect ratio to 16:9 (standard HD). Consult your television users documentation for instructions.

Play clips in the recorder on a personal computer
You can view clips that are in the recorder on a personal computer without first uploading them to the computer. You might want to do this to identify which clips you want to upload or to show clips on a computer you don't want to store the clips on.

- If the recorder is powered down, power it up.
- Connect the recorder to a USB port on the computer using the USB cable included with the POV.HD, or any standard USB 2 cable with compatible connectors.
- The LCD will display "USB Connection Detected, Enter USB Mode?" indicating that you are linked to a computer via USB. The left soft key is labeled "USB Mode", and the right soft key is labeled "No".

- Select **USB Mode** to connect to the computer via USB. While in USB Mode, the recorder cannot be used for any other function.
- On a Mac, the recorder will appear in the Finder as an external drive.
- On a Windows PC, in Windows Explorer, the POV.HD will appear as a removable disk under My Computer.
- Up to this point, the procedure is the same as that used to upload clips, but now simply play the clips that are on the recorder the same way you play clips that are stored on a local drive.

Note: Always upload clips before using an external video editor on them. Even though it is possible to use a computer based video editor to edit clips while they are still on the recorder, this is not recommended. Space on the SDHC card is limited and your editor may not be able to complete it's operations successfully. Edited clips may not be recognized and handled correctly by the recorder firmware.
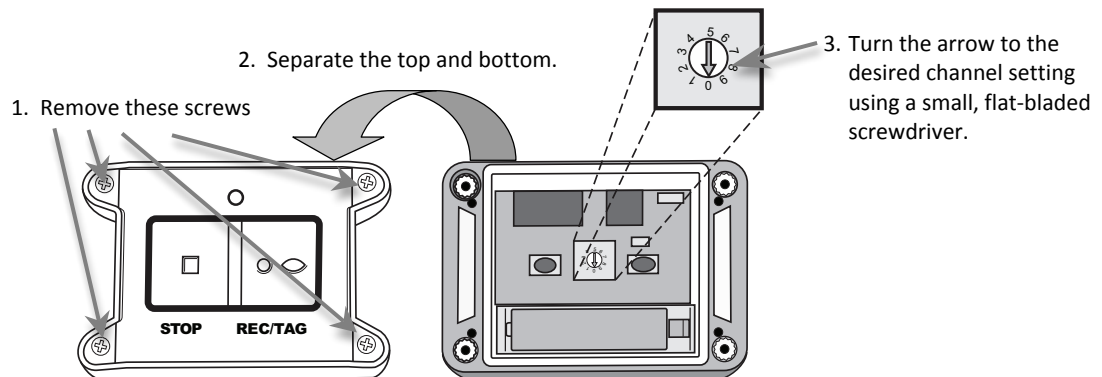
Change the remote ID channel on the remote control

If you are using more than one POV.HD and/or POV.1.5 system in the same area, at the same time you will need to adjust the Remote ID channel numbers that the wireless remotes are using to communicate with the POV recorders so that each POV is using a different channel.

The remote control and POV recorder it is associated with must be set to the same channel in order to work together, but must be different than other POV's in use in the same area.

The Remote ID channel of the wireless remote is set using a small rotary dial located inside the remote control.

- To adjust the channel you will need to open the remote control unit by removing the four small Phillips screws at the four corners of the remote.
- Use a small flat bladed screwdriver to carefully rotate the pointer to the desired setting. Take care to protect the inner workings of the remote from dust and moisture while the cover is removed

1. Remove these screws
2. Separate the top and bottom.
3. Turn the arrow to the desired channel setting using a small, flat-bladed screwdriver.

- Replace the cover, tightening the four screws uniformly to create even pressure against the seal

Change the remote ID channel on the POV.HD

To change the Remote ID Channel on the POV.HD,

- Go to **Settings** and locate **Remote ID Channel.**
- Set the **Remote ID Channel** to the same channel number that the wireless remote has been set to.
- Check the wireless remote to see that it is communicating correctly with the recorder. See **Check the Wireless Remote**, above.

Update the firmware on the POV.HD

From time to time VIO may make updates to the firmware in the POV.HD available to owners of the POV.HD. These updates improve system performance and may add new features. You will be notified by email when a firmware update is available.

Download a firmware update

The email notification you receive will contain a link to a web page from which you can download the new firmware. If you don't have this link available, or to check for new firmware you may have missed, go to:
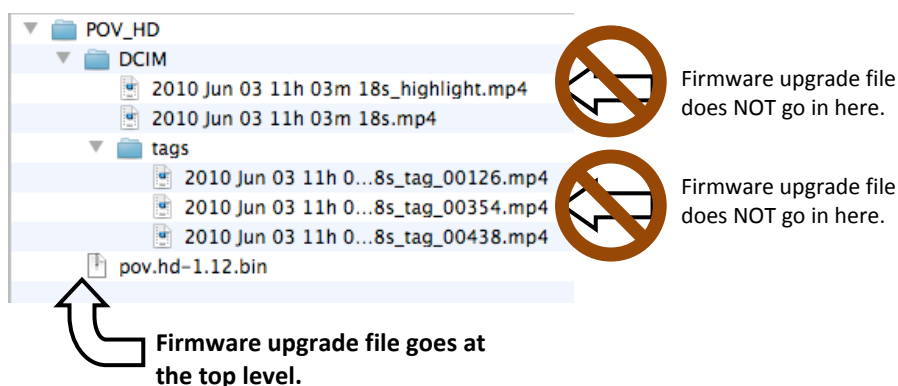
> http://www.vio-pov.com/support/pov_hd_firmware_upgrade .

To download the new firmware, click on the **Download Firmware Upgrade** link toward the bottom of the page. The firmware will be downloaded in a ZIP file which contains the firmware plus a version specific set of the instructions given below.

Install the Firmware

Put the new firmware on an SDHC card

- Unzip the downloaded firmware upgrade file
  You will get a folder containing a PDF with upgrade instructions, and the firmware upgrade file which will have the format: pov.hd-x.yy.bin where "x.yy" is the version number for this upgrade.
- You can put the firmware on an SDHC card in one of two ways
  1. Put the SDHC card into an SDHC card slot on your computer or into an SDHC card reader attached to your computer, OR
  2. Connect you computer directly to the recorder with an SDHC card in it using the USB link.
- In either case, simply drag the firmware BIN file onto the SDHC card in Windows Explorer or OS X Finder. The firmware file goes into the top level folder/directory. The firmware does NOT go into the DCIM folder/directory. See the example below.

> If there is an upgrade file for an older version of the firmware on this SDHC card delete that file at this time.

Put the SDHC card with the firmware into the recorder

- If you used an SDHC card slot or an SDHC card reader attached to your computer, dismount and remove the SDHC card and put that card into the recorder. Be sure to power down the recorder before removing an SDHC card that may be in it and inserting the SDHC card with the upgrade file.
- If you copied the upgrade file directly onto the SDHC card in the recorder using the USB link, simply dismount the recorder and remove the USB cable.
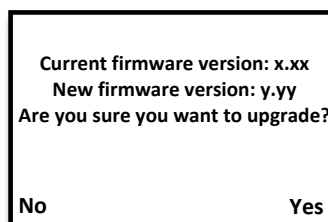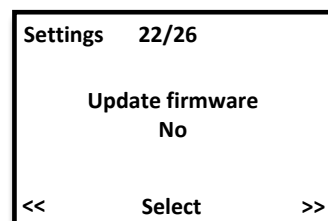
Prepare the recorder

- If the recorder is not powered up, power it up now.
- Check the battery level when the recorder goes into Standby mode. If you do not have at least half a charge left on the batteries, power down the recorder and install fresh batteries. It's essential that the recorder not lose power while the firmware upgrade is in progress.
- Power down the recorder.
- Remove the camera head from the recorder. This is required to ensure the new firmware can initialize itself correctly.

Install the firmware

IMPORTANT NOTE: Do not install the firmware unless you have verified that the batteries have an adequate charge, see **Prepare the recorder**, above.

- Power up the recorder
- Press the Settings button to go to Settings
- Navigate to the Firmware Update setting using the << (Previous) or >> (Next) soft key. (The Previous soft key will get you there quicker.)
- At the Firmware Upgrade setting, press the Select soft key, then press >> one time to change the "No" option to "Yes".
- Press the Select soft key.
- You will be asked to confirm the firmware upgrade
- If the new firmware version is the version you intend to upgrade to, press the Yes soft key. This will start the firmware upgrade. If not, see #1 or #2 in" Troubleshoot firmware upgrade problems", below
- IMPORTANT: Do not turn the recorder off or remove the SDHC card while the firmware is being updated. The update process takes only a short time (1 – 2 minutes).
- When the update is complete, the screen will display the message: "Press any key to power down." Do that.

```
Settings    22/26


         Update firmware
              No


<<          Select          >>
```

```
Current firmware version: x.xx
New firmware version: y.yy
Are you sure you want to upgrade?


No                        Yes
```

Check out the recorder

- Re-attach the camera head.
- Power up the recorder.
- The recorder should power up normally and go into Standby. The LCD should display the feed from the camera head.
- Press the Settings button to go to Settings, then navigate to the Setting titled "Recorder Model". Press the More soft key until you see "Recorder App Version". This should indicate the firmware version that you just installed. If it does not see Troubleshoot firmware upgrade", below.
- If the recorder has been updated to the new firmware version, you're all set to go.

Troubleshoot firmware upgrade problems

1. If you set the Update Firmware setting to "Yes", and you see the message: "No firmware upgrade file found on the SDHC card!"
   - Click "OK" twice to leave Update Firmware, then
   - Check to see that the correct firmware upgrade file is loaded on the SDHC card, and that it is not in the DCIM folder/directory. (You will need to use the USB link or you will need to remove the SDHC card and place it in an SDHC card slot on your computer or in an external SDHC card reader to check for the file.)
     - The firmware upgrade file looks like this: pov.hd-*x.yy*.bin . "x.yy" is the firmware version number.
     - The firmware upgrade file must be at the highest folder/directory level on the SDHC card.
   - If the firmware upgrade file is loaded correctly, check to see that no older firmware upgrade files are still on the card. If any older firmware upgrade files are present, delete them.
   - If the firmware upgrade file is loaded on the SDHC card correctly, and no other firmware upgrade file is on the SDHC card, try the upgrade process again, starting with "Install the firmware upgrade" above. The camera head should still be detached from the recorder. If it is not, remove it before installing the firmware upgrade.
   - If Upgrade Firmware still does not recognize the firmware upgrade file, delete that file from the SDHC card and from your computer and download the firmware upgrade zip file from the VIO web site again. Then redo the firmware upgrade process with the new file.
   - If the recorder fails to recognize the newly downloaded firmware upgrade file, and it is correctly loaded on the SDHC card, contact VIO Customer Support.

   Note: If you cannot resolve this problem, and are unable to contact VIO Customer Care at this time, you can continue to use your POV.HD with the older version of the firmware until you get help. Customer Care Contact information is on the last page of this manual.

2. If you set Upgrade Firmware to "Yes" and the confirmation message indicates that you are upgrading to the wrong version of the firmware,
   - Press the "No" soft key to leave Upgrade Firmware.
   - Check to see that the correct firmware upgrade file is loaded on the SDHC card, and that it is not in the DCIM folder/directory. (You will need to use the USB link or you will need to remove the SDHC card and place it in an SDHC card slot on your computer or in an external SDHC card reader to check for the file.)
     - The firmware upgrade file looks like this: pov.hd-*x.yy*.bin . "x.yy" is the firmware version number.
     - The firmware upgrade file must be at the highest folder/directory level on the SDHC card.
   - If the firmware upgrade file is loaded correctly, check to see that no older firmware upgrade files are still on the card. If any older firmware upgrade files are present, delete them.
   - If the firmware upgrade file is loaded on the SDHC card correctly, and no other firmware upgrade file is on the SDHC card, try the upgrade process again, starting with "***Install the firmware upgrade***" above. The camera head should still be detached from the recorder. If it is not, remove it before installing the firmware upgrade.
   - If Upgrade Firmware still does not indicate that you are upgrading to the correct version, press the "No" soft key to leave the upgrade process, and contact VIO Customer Care. Contact information is on the last page of this manual.

   Note: If you cannot resolve this problem, and are unable to contact VIO Customer Care at this time, you can continue to use your POV.HD with the older version of the firmware until you get help. Customer Care Contact information is on the last page of this manual.

3. If you complete the firmware upgrade process but Settings indicates that you are still using the older version:

- Check to see that the correct firmware upgrade file is loaded on the SDHC card, and that it is not in the DCIM folder/directory. (You will need to use the USB link or you will need to remove the SDHC card and place it in an SDHC card slot on your computer or in an external SDHC card reader to check for the file.)
  - The firmware upgrade file looks like this: pov.hd-*x.yy*.bin . "x.yy" is the firmware version number.
  - The firmware upgrade file must be at the highest folder/directory level on the SDHC card.
- If the firmware upgrade file is loaded correctly, check to see that no older firmware upgrade files are still on the card. If any older firmware upgrade files are present, delete them.
- If the firmware upgrade file is loaded correctly, check to see that no older firmware upgrade files are still on the card. If any older firmware upgrade files are present, delete them.
- If the correct firmware upgrade file is on the SDHC card and in the correct location, and you deleted unwanted firmware upgrade files from the SDHC card, try installing the new firmware again, starting with "***Install the firmware upgrade***" above. The camera head should still be detached from the recorder. If it is not, remove it before installing the firmware upgrade.
- If the recorder does not show the correct, new firmware version after running the upgrade process with the correct file on the SDHC card and in the correct location and with no other firmware upgrade files on the SDHC card, contact VIO Customer Care.

Note: If you cannot resolve this problem and you are unable to contact VIO Customer Care at this time, you can continue to use your POV.HD with the older version of the firmware until you get help. Customer Care Contact information is on the last page of this manual.

Settings

Using the built-in settings, you can configure the POV.HD to create optimal video in every shooting situation, maximize battery life, select **Record Methods**, set the time and date, and perform in-field editing.

The POV.HD is shipped with default settings that create great HD video under most normal conditions, so you can choose to shoot without worrying about the settings at all, and if you do change the settings, you can return to the default values in a single step.

Adjusting settings

1. Power up the POV.HD recorder if it's not already on. You must be in **Record Standby** or **Play** mode to access the **Settings**.

2. Press the **Settings** button.

3. Use the **<<** and **>>** soft keys to navigate between settings.

4. The name of the setting and its current value are displayed for each setting.

5. To change a setting press the **Select** soft key when that setting is visible. The current value of the setting will be shown in red.

6. To change the value of a selected setting, use the **<<** and **>>** soft keys to cycle through the possible values. When the value you wish to select is shown, press the **Save** soft key to store the new value. Note that in the example, the **Record Method** has been changed to **Loop & Forward**, and the **Select** soft key is now **Save**.

7. To exit from the settings menus, press **Play** or **REC**, or power down the recorder.

NOTE: If you select one of the settings, then use << and/or >> to move to a different value for the setting, the new value is not saved until you press **Save** and the previous value remains unchanged.

Settings Summary

Here's a quick reference list of all the POV.HD settings. Detailed information about the settings as well as tips and guidelines for their use are provided in the following section**, Tips and Guidelines for Getting the Most out of Your POV.HD.**

The POV.HD is set to the default values out of the box. These are also the values that are set if **25 Restore All Default Settings** is used.

1 LCD Sleep Timeout

Sets the idle time required before the LCD goes to sleep.

LCD Sleep Timeout will not occur during video playback. LCD Sleep Timeout may occur when recording video. Any use of the soft keys or other buttons on the recorder resets the LCD Sleep Timeout timer. If the LCD has timed out and is dark, pressing any key or button will turn the LCD back on, and will not perform the function associated with that key.

Using the wireless remote does not affect LCD sleep timeout.

Options:	**Never**
	15 sec
	1, 2, 3, 5,10,15, or 30 min
Default:	**1 min**

2 Power-off Timeout

Sets the idle time required before the recorder shuts down.

Power-off Timeout will not occur while you are recording video or during video playback. Any use of the soft keys or other buttons on the recorder resets the Power-off Timeout timer.

Options:	**Never**
	15 sec
	1, 2, 3, 5,10,15, or 30 min
Default:	**Never**

3 Speaker Volume

Sets the audio playback volume through the built-in speaker.

Options:	**Off**
	Volume levels **1 - 9**
Default:	Level **9**

4 Alert Volume

Sets the volume of alert sounds on the recorder.

Options:	**Off**
	Volume levels **1 - 9**
Default:	Level **5**

5 Microphone Level

Sets the gain level of the audio input from the on-cable microphone.

Options:	**Auto**,
	Off
	Levels **1 - 4**

Auto allows the system to adjust the audio input automatically.
Off disables audio input from the microphone.
Levels **1 – 4** set the relative gain level.

| *Default*: | **4** |

6 Record Method   Sets the method by which you control the recording and tagging of video or capture of still photos.

Options:	**Clip**
	Loop
	Loop and **Forward**
	Still Photo

| *Default*: | **Clip** |

7 Loop Record Time   Sets the **loop time** used in **Loop** and **Loop** and **Forward** recording. **Loop Record Time** is also used in In-field Editing.

| *Options*: | **20, or 30 sec** |
| | **1, 2, 3, 5, 10, 15, or 30 min** |

| *Default*: | **2 min** |

For more information, see **Understanding the POV.HD Record Methods**, in the next section.

8 Video Resolution and Frame Rate   Sets the video resolution and frame rate for recording video.

Options:	**1080p30**	
	720p60	
	1080p25	
	1080p24	
	720p50	[Firmware version 1.12 or later]
	720p30	
	720p25	[Firmware version 1.12 or later]

| *Default*: | **1080p30**. |

9 Image Quality   Adjusts the amount of compression applied to the recorded video. Higher quality means less compression but larger file sizes. Lower quality means more compression and smaller file sizes.

Options:	**Very High**	(16 Mbits/sec)
	High	(12 Mbits/sec)
	Medium	(10 Mbits/sec)
	Low	(8 Mbits/sec)

| *Default*: | **High** |

Important Note: The **Very High** (16 Mbits/sec) setting is intended primarily for professional video recording. Most personal computers may experience difficulty when playing back video recorded at 16 Mbits/sec. The **High** setting will produce the best video reproduction for most normal use.

For more information, see **Optimizing Video Quality**, in the next section.

10 Video File Format

Sets the encapsulation codec used to record video on the POV.HD.

*Options***:** .mov
.mp4

*Default***:** .mp4

11 Exposure Metering

Sets the window within the frame that the auto exposure logic uses for light metering.

Options: **Full Frame**
Spot

Default: **Full Frame**

For more information, see **Optimizing Video Quality**, in the next section.

12 Exposure Compensation

Sets an offset to the dynamic exposure level the automatic exposure logic determines for your video or still photo recording.

Options: **–3, –2, –1, 0, +1, +2, +3**

–1, –2, –3 are the number of steps by which the exposure is *reduced*.

0 applies no exposure compensation. The dynamic exposure control values are used without adjustment.

+1, +2, +3 are the number of steps by which the exposure is *increased*.

Default: Level **0** (no compensation applied)

For more information, see **Optimizing Video Quality**, in the next section.

13 Noise Filter

Reduces or removes random video noise on each frame. Video noise may consist of singular tiny "picks" of contrasting color or general speckling especially of darker areas most often encountered in very low light situations.

Options: **ON/OFF**

*Default***:** **ON**

For more information, see **Optimizing Video Quality**, in the next section.

14 Sharpener

Increases the perceived sharpness of the recorded image by increasing the contrast along the edges of objects in the frame.

*Options***:** **ON/OFF**

*Default***:** **ON**

Note: If you intend to do editing on a video clip after it is uploaded to a computer, you should turn **Sharpener OFF** when the clip is recorded. The effects applied by the **Sharpener** may produce undesirable effects when additional filters or effects are applied in an editor.

For more information, see **Optimizing Video Quality**, in the next section.

15 Time and Date Stamp Overlay

Places the system time and date on each frame in any clip recorded while this setting is set to either "Bottom" or "Top". The time and date overlay is continuously updated while the clip is being recorded, so that if the system time and date are set correctly, the overlay shows the actual time of each frame in the clip.

Options: **Bottom/Top/None**

  Bottom places the Time/Date overlay in the low right corner of the frame.

  Top places the Time/Date overlay in the upper right corner of the display

  None causes the Time/Date overlay to not be displayed

Default: **None**

[This feature is available in firmware version 1.12 or later.]

16 LCD Brightness

Sets the brightness level of the LCD.

Options: Brightness levels **1 - 10**

Default: Level **10**

17 Video Output

Sets the format of analog output through the A/V port on the recorder.

Options: **NTSC** or **PAL**

Default: **NTSC**

18 AV Out Overlay Timeout

Specifies a timeout value to remove the normal playback overlay from the video feed to the AV Out port. This also removes the playback overlay from the LCD so that what is seen on the LCD is the same as what goes out the AV video feed.

Options: **15 sec**
                    1 min
                    2 min
                    3 min
                    5 min
                    10 min
                    15 min
                    30 min
                    Never

Default: **Never**

Note: Only the overlay added during playback is removed. If a video clip has the Time and Date Stamp Overlay on it, that overlay is part of the recorded clip and cannot be removed.
[This feature is available in firmware version 1.12 or later.]

19 Remote Control ID Selects the ID to be used with your wireless remote. The wireless remote can be set to ID's 0 - 9 to allow multiple POV's to operate in the same vicinity.

The recorder and remote are both set to ID 0 out of the box.

Options: *Channels 0 through 9*

Default: **0**

Note: POV.1, POV.1.5, POV.T, and POV.HD all share the same wireless remote ID channels, allowing any of these devices to be used in the same vicinity if different ID's are set on each device.

20 Time and Date Sets the POV system time and date which is used to designate file creation time.

21 Format SDHC Card Formats the installed SDHC card.

Caution: This action erases all files on the SDHC card.

22 Update Firmware Installs a firmware update from the SDHC card. This setting is used as part of the POV.HD firmware update process when updates are made available by V.I.O.

23 Save Tags Causes the recorder to create a separate **tag clip** from each of the tags on a tagged clip. The length of these tag clips is based on the current value of the **Loop Record Time**.

See **Using the Built-in Editing Features** below.

24 Compile Tags Causes the recorder to create a single **highlight clip** for each tagged video clip on the SDHC card.

See **Using the Built-in Editing Features** below.

25 Recorder Model Displays information about the recorder, firmware, and camera head on the LCD. Pressing the More soft key cycles through

Recorder Model
Recorder Serial Number
Recorder App Version
Linux Operating System Info
Recorder Build Info
Recorder Camera Serial

26 Restore All Default Settings Returns all settings to their default values. This action does not reset the system time and date.

Tips and guidelines for getting the most out of your POV.HD

Over time you will learn from experience exactly how you want to configure the POV.HD settings for the conditions you shoot in. This section will help get you started and answer some basic questions about how to use the settings.
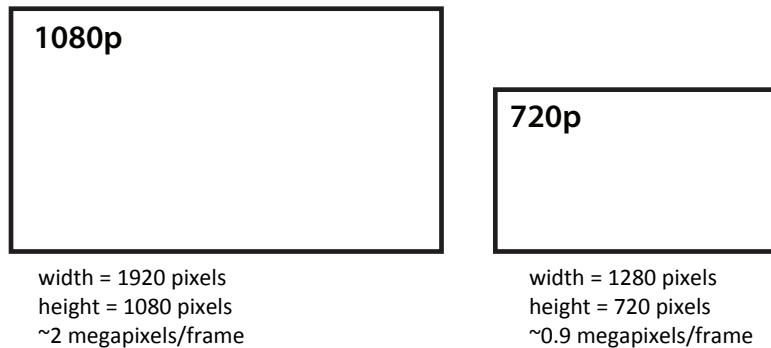
Choosing a video format

The POV.HD supports several different recording formats which are designated by industry standard labels such as 1080p30. In this example, '1080' designates 1080 horizontal scan lines in the frame, 'p' designates progressive scanning which means all lines in the frame are captured in each frame, and '30' designates 30 frames per second.

(You may have noticed elsewhere formats such as 1080i. In such a case, 'i' designates interlaced scanning in which the odd numbered scan lines are captured in in one frame and the even numbered lines in the next. This method uses less bandwidth and less file space, but in some circumstances such as filming rapid motion the perceived picture may not be as sharp as with progressive scanning. Also the frame rate is commonly left off the label for consumer video equipment because consumer TV sets automatically adjust to the frame rate of the incoming signal.)

Format Resolutions

In this illustration, the shape of each example shows the shape (aspect ratio) in which each format is displayed. The area of each example is proportional to the resolution. The actual physical size of any format is determined by the device on which it is displayed.

1080p

720p

width = 1920 pixels
height = 1080 pixels
~2 megapixels/frame

width = 1280 pixels
height = 720 pixels
~0.9 megapixels/frame

Comparison of POV.HD Video Formats

Format	Resolution (Pixel Size of Frame)	Frame Rate (per second)	Best For
1080p30	1920 wide X 1080 high	30	Highest quality HD video when displayed on a high resolution, high quality monitor[1]
1080p25	1920 wide X 1080 high	25	Frame rate compatibility with European broadcast standards
1080p24	1920 wide X 1080 high	24	Frame rate compatibility with standard cinematography
720p60	1280 wide X 720 high	60	High quality HD video with the option for smooth slow motion playback[2]
720p30	1280 wide X 720 high	30	High quality HD video with somewhat reduced file size.
720p50	1280 wide X 720 high	50	Frame rate compatibility with European broadcast standards [Firmware version 1.12 or later]
720p25	1280 wide X 720 high	25	Frame rate compatibility with European broadcast standards [Firmware version 1.12 or later]

Table Notes

[1]1080p is higher resolution and, under identical conditions will generally produce a slightly sharper picture, but conditions are seldom identical and almost never ideal. Depending on the type of television receiver or computer screen on which the video is played back, room lighting, viewing distance from the screen, and other factors, the difference in picture quality between 1080p and 720p may or may not be significant or even detectable. It's best to try it and see.

[2]On the POV.HD, 720p60 is recorded at 60 fps and 720p50 is recorded at 50 fps for compatibility with European broadcast standards which allows clips recorded this way to be played back in smooth slow motion, and for action filming these will often be the format of choice. Because, on the POV.HD, 720p60 records twice as many frames as 1080p30 and 720p50 records twice as many frames as 1080p25, the resulting file sizes in these two situations are roughly the same.

Understanding the POV.HD Video Record Methods

The POV.HD supports three video **Record Methods**: **Clip**, **Loop**, and **Loop & Forward**.

- **Clip** works like a regular video recorder. After you start recording, the POV.HD records continuously until you stop recording, and what you've recorded is stored in a file, called a "clip" on the SDHC card.

- **Loop** allows you to select what action to record and save, without the need to be constantly starting and stopping the recorder. To use the **Loop** method you must set **Record Method** to **Loop** and the **Loop Record Time** to an interval that is appropriate for your situation. (More on that in a moment.) These are set using settings.

- **Loop** and **Forward** works like **Loop**, except that once you've captured the first **Loop** clip by pressing **Tag** or **REC/TAG** the recorder saves the previous segment plus all of the video from that point until you stop recording.

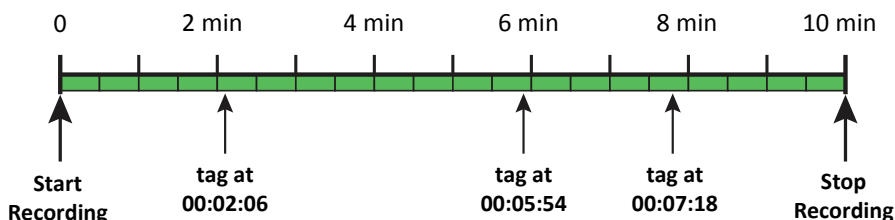**How the three Record Methods work**

The illustrations below compare the **Clip**, **Loop**, and **Loop & Forward Record Methods**. When the explanation of the examples refers to pressing **Tag**, you can either press **Tag** on the recorder or **REC/TAG** on the wireless remote. Once you're in **Record Standby** mode, all recording control and tagging can be done on either the recorder or the wireless remote.

In these diagrams, with the recorder in Record Standby mode, we show video recording done in a 10 minute period between starting recording by pressing **REC** on the recorder or **REC/TAG** on the wireless remote (Start Recording) and pressing **REC** again on the recorder or **STOP** on the wireless remote (Stop Recording). The green area on the timeline indicates what video footage is actually captured.

In all three examples, the **Tag** button was pressed three times: at 00:02:06, at 00:05:54, and at 00:07:18. The examples show how the results are different in all three cases.
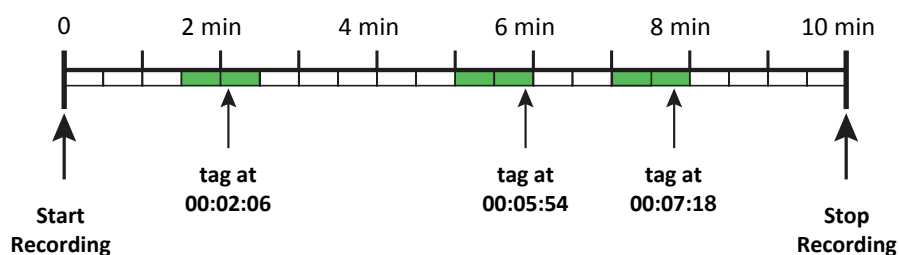
The **Loop Record Time** is set to 30 seconds.

Clip Method

Using the **Clip Record Method**, recording starts when **REC** is pressed and runs continuously until **REC** is pressed again. This is exactly the way a standard video recorder works. In addition, each time the **Tag** key is pressed, a *tag* is recorded, for later possible use with the built-in editing features.

Loop Method

Using the **Loop Record Method**, recording starts when the **REC** button is pressed, but the captured video isn't saved until **Tag** is pressed. When **Tag** is pressed at 00:02:06, a set of three short clips, called *loops*, are saved, one for each segment indicated in green around that tag. When **Tag** is pressed at 00:05:54, another set of loops is saved, and finally, when **Tag** is pressed at 00:07:18, a third set of loops is saved.

When in the **Loop Record Method**, pressing **Tag** causes a set of loops to be saved, but it does NOT put a tag on the video. Each loop is saved as a separate, untagged clip.
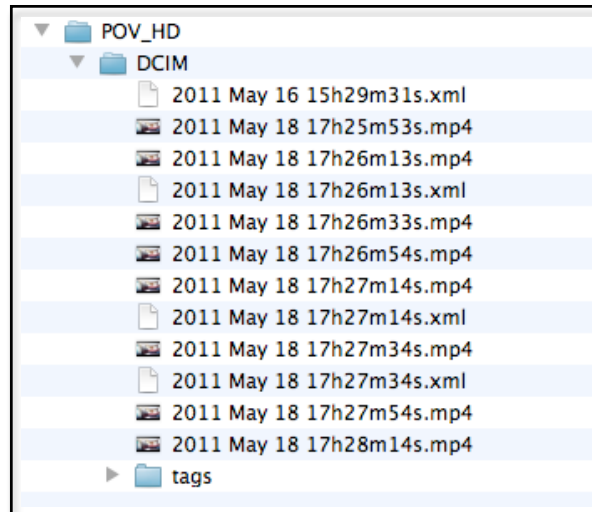
How loops are defined

You may have noticed that the saved clip isn't always aligned exactly the same way with the clip. This is because of the way the **Loop Record Method** captures the loop clips.

When the POV.HD begins recording using the **Loop Record Method**, it gets the Loop Record Time–30 seconds in this example–and begins recording a segment of that length. When that segment is complete, it is saved temporarily, and another segment is started. The drawings show the time line divided into 30 second chunks which correspond to the recorded segments for this example.
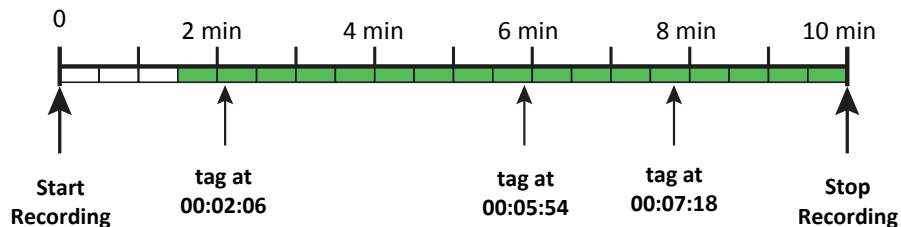
When you press Tag to save a loop, the POV.HD saves the entire segment you're in right now plus the segment that immediately precedes it and the segment that follows it. This means that if you press tag just after something exciting happens, you will capture what happened immediately before the tag. When using the **Loop Record Method**, you don't need to anticipate what's going to happen in order to catch everything. Loop lets you catch things after the fact. Because the **Loop Record Method** also saves the segment immediately following the current segment, if you hit tag near the end of the current clip you will still get one entire segment following your pressing **TAG**.

NOTE: Each time you press **TAG**, the POV.HD saves four separate clips. One for the segment preceding the current segment, one for the current segment, one for the segment following the current segment, and an XML file for the tag which created the clips. Each of these is stored as a regular clip file. The figure below shows the nine clip files that result from the example above. Also note that there are no entries in the 'tags' directory.

Loop & Forward is a combination of the Loop and Clip methods. When you start recording video is captured, but none of it is saved until the first time you press Tag. At that point, the POV.HD saves a loop just as it would in Loop, but from that point forward, all video is saved, as it would be when using Clip.
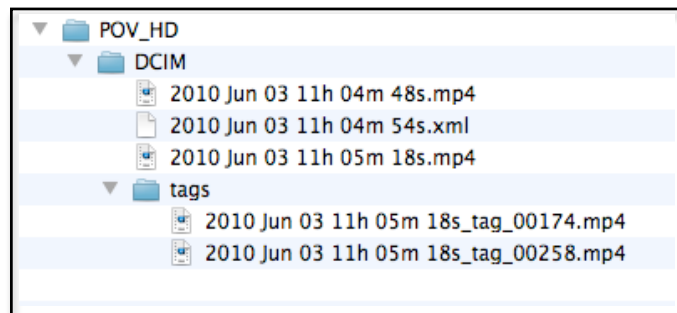
Loop & Forward Method

Once you have pressed Tag to start saving captured video, pressing Tag again adds a tag to the clip, again as it would if you were using clip.

Loop & Forward allows you to record using the Clip method, without starting the clip until the action starts. You can get everything set up, stow the recorder, and get yourself over to the starting line without the need to record fifteen minutes of waiting time which you're going to want to edit out later anyway. When the gun's about to sound, hit the tag key on the remote and real recording starts.

Notice that when you do start to capture video, some of the preceding action is captured just as it is when using the Loop method. This helps ensure that you capture all the action even if you don't remember to hit Tag until right after the start. Just remember to set the Loop Record Time to a large enough interval to make sure you're covered.

NOTE: Loop and forward creates two clip files, one for the segment immediately preceding the current segment and one for the current segment plus all of the remaining video. The figure below shows the two clip files, the XML tag file, and the two tag clip files that result from the example in the Loop & Forward illustration.

The first clip file in the DCIM directory is the segment that precedes the first tag, and the second clip file which starts 30 seconds later is for the remainder of the video. Notice that there are two tag files. The first time **TAG** was pressed it started the storage of the video but did not create a tag clip. The second and third presses of **TAG** did create tag clip files and they are associated with the second main clip file. All three of the tags are recorded in the XML tag file.
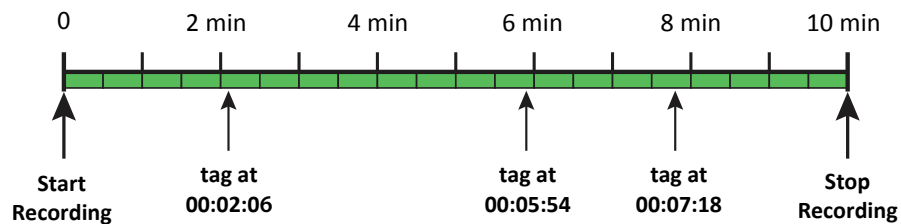
Using the built-in editing features

The POV.HD can perform basic, automated editing operations within the recorder, based on tags you've placed in your video clips.

Save Tags

Save Tags creates a separate clip for each tag in a recorded clip. Using the Loop Record Time value that is set at the time Save Tags runs, Save Tags creates a clip with half of the Loop Record Time preceding the tag and half following it.
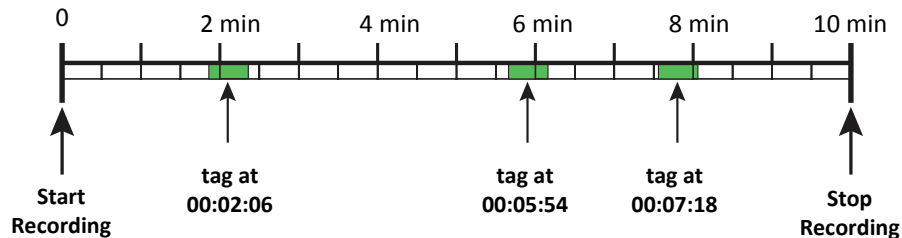
For example, look again at the example used earlier to explain the **Clip Record Method**;

Clip Made Using the Clip Method

You've made a ten minute clip with tags at 2:06, 5:54, and 7:18, and the Loop Record Time is set to 30 seconds. If you run Save Tags, you will get 3 new clips—one for each tag.

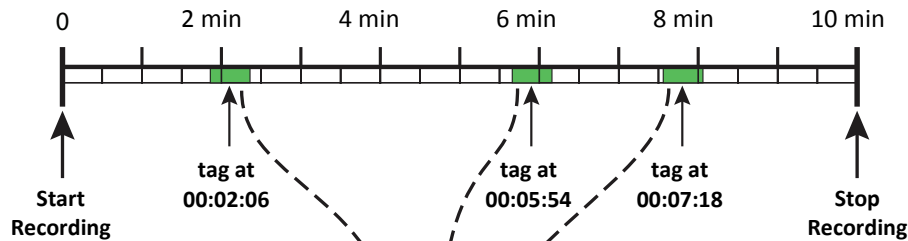### Tag Clips Made Using Save Tags

- Clip 1 will run from 2:51 to 2:21. Since the Loop Record Time is 30 seconds, the clip starts half that length (15 seconds) before the first tag, which is at 2:06, and goes for 30 seconds, which takes it 15 seconds past the tag, which is 2:21.

- Clip 2 will run from 5:39 to 6:09.

- Clip 3 will run from 7:03 to 7:33.

The tag clips created by Save Tags are placed in a subdirectory called "tags". The tag clips can be uploaded to a computer for viewing or appending into a larger clip, but they cannot be viewed or manipulated on the recorder itself.
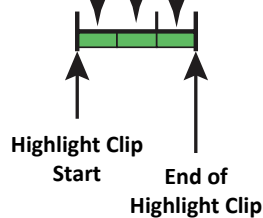
Compile Tags

Compile Tags extracts video clips similar to those made by Save Tags does, and appends those temporary clips into a single Highlight Clip that is saved in the main clip directory (DCIM). The individual clips extracted by Compile Tags are not saved. The Highlight Clip is saved in the main clip directory (DCIM).
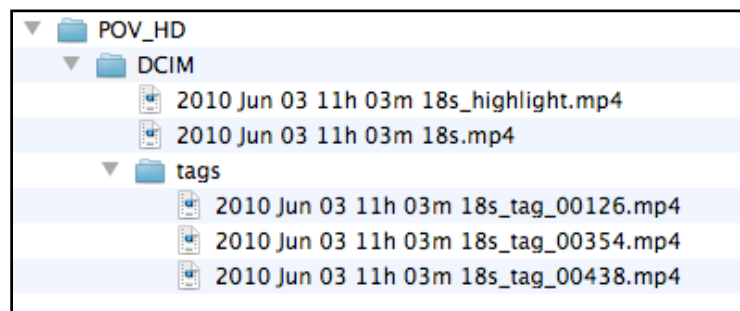
1. Compile Tags extracts video segments from the original clip, and...

2. Appends them to form a Highlight Clip

The example below shows the file structure that results from running Save Tags and Compile Tags on the tagged clip example used earlier. All tag clips are in the "tags" subdirectory and are identified with "_tag_xxxxx" where xxxxx = the number of seconds after the start of the clip at which the tag occurred. In this case, 00126 = 2 min 6 sec, and so on. The Highlight Clip created by Compile Tags is in the DCIM directory and is identified by "_highlight".

General information about file name is given in **File Names on the POV.HD**, above.

Choosing a Record Method

Clip – Loop and Loop & Forward provide advantages under some circumstances, but generally, recording using the Clip method is the simplest and most effective approach. Using tags while recording with the Clip method supports the convenience provided by Save Tags and Compile Tags, and when you've recorded an entire event using Clip, you still have footage of everything for manual editing, if you choose to do so.

For any recording that will last only a few minutes, there is no reason to use any method other than Clip.

Loop & Forward – Loop & Forward supports the same in-field editing capabilities as Clip and has one possibly significant benefit. It allows you to get set up and stow the recorder long before you start the actual recording process.

For example, if you're participating in a large, downhill mountain bike event involving hundreds of riders, you can get the camera set up and ready to go before you join the pack at the starting area. When it gets close to starting time, press the REC/TAG button on the wireless remote one time and recording will start. After that just hit REC/TAG each time you want to tag some of the action.

> (i) When you use Loop & Forward, the recorder **will not** time out and shut itself off after you initially press REC, no matter how long you wait until pressing REC/TAG to start actual video capture.

Loop – The results produced by Loop are similar to the results you get by running Save Tags on a tagged clip. Every time you press Tag, you will end up with a short clip that captures the action near that tag. But there are some important differences between Loop recording and applying Save Tags to a tagged video made with Clip or Loop and Forward.

Based on the comparisons in the table below, the **Loop Record Method** is a better choice if you are recording a long event with a limited number of periods you want to record, especially if the space left on the SDHC card is limited.

Loop is also the correct choice if you want to be able to see just the Loop clips on the recorder. However, note that if you use Compile Tags you will get a Highlight Clip of all the tagged bits, and the Highlight Clip can be viewed on the recorder. In all other cases, making a complete, tagged recording using Clip or Loop & Forward provides more choices in how to handle the recorded video clip after you make it.

Loop Recording	Save Tags Applied to a Tagged Clip
The length of all loop clips is equal to twice the value of Loop Record Time at time the recording was done.	The length of all tag clips are equal to the value of Loop Record Time at the time Save Tags is run.
Loop clips show action that mostly occurs prior to the tag, with a variable amount of footage following the tag.[1]	Save Tags creates clips that are aligned so that half of the clip is prior to the tag and half follows it.[1]
The Loop method saves only the loop clips. Other action that occurs during the recording period is not saved.	The original clip on which Save Tags operates contains all of the action that occurred during the recording period.
Loop clips can be reviewed on the recorder.	Tag clips made with Save Tags must be uploaded to a computer before they can be viewed.[2]
Recordings made with Loop will usually require less storage than Clip or Loop & Forward recordings.[3]	Using Save Tags on a clip requires storage for both the original clip plus the tag clips.

Table Notes:

[1] See the diagrams for Loop and for Save Tags, in the preceding sections.

[2] Tag clips can be deleted from the SDHC card using the recorder by deleting the tagged clip file on which they are based.. They are automatically deleted when the tagged clip is deleted.

[3] Each time you press tag when using the **Loop Record Method**, a loop clip equal in length to twice the Loop Record Time is saved. If you press tag, on the average, more frequently than the length of a saved Loop, you will store a total footage that is greater than the total running time.

Optimizing video quality

Ultimately video quality is in the eye of the beholder. We can measure and adjust clarity, color accuracy, color depth, white balance, contrast, and all kinds of other things to make the video you take to look as good as possible to you and your friends. The POV.HD includes both automatic controls that ensure high quality video under a wide variety of shooting conditions and manually adjustable settings for tweaking video quality.

One of the most difficult problems with hands-free POV video is that the scene you're filming changes continuously and since you may be busy hanging on and going as fast as you can, the camera needs to take care of the second to second details.

The POV.HD has built-in dynamic exposure control and white balance logic that constantly adjusts, not just the exposure, but the white balance, contrast level, and color depth as well. Under almost any outdoor shooting conditions this results in high quality video.

The POV.HD adds four settings that give you the optional ability to tweak the frame processing logic to create an optimal match between prevailing conditions and your preferences for the look of the final video. You can shoot high quality video all day without ever thinking about these settings, but under certain conditions, using the video adjustment settings can produce even better results. With just a bit of practice even a novice can learn when and how to make beneficial adjustments. If you're familiar with the adjustments available on a DSLR still camera, you will already know about these settings.

Spot Exposure Metering

The dynamic exposure control logic works by analyzing the light level and other other key characteristics of the image in frames as their captured by the camera head, and then adjusting the exposure level of the imager in the camera head to compensate for changes in light levels. When you ride from sunlight into shade, the POV.HD will automatically increase the exposure level to compensate.

By default, the dynamic exposure control logic looks at all the pixels in the frame, which is referred to as **full-frame exposure metering.**

Full frame metering is generally the best overall strategy, but under some shooting conditions this approach requires possibly undesirable compromises because different areas of the scene may have significantly differing lighting. The solution to this is to measure the light level on just the area of greatest interest to ensure that it is recorded optimally, allowing peripheral areas to possibly be somewhat over or under exposed.

Spot Exposure Metering uses just the area in the center area of the frame for measuring the light level. Under conditions where the light levels in various parts of the frame vary greatly over time, this ensures that the area in the center of the frame which is normally the area of greatest interest, will be optimally exposed and balanced.

For example, on a ride through dark woods on a bright day, you will move in and out of shadow, and bright patches of sunlit sky will appear at various places on the frame at random times, possibly even when most of the scene is in dark shadow. Using the **Spot** exposure window will prevent these peripheral bright areas and very deep shadows from having any unwanted influence on the exposure control applied to the camera's view of trail immediately ahead of you.

Exposure Compensation

Exposure Compensation allows you to shift the exposure level up or down from the level determined by the dynamic exposure control logic. Exposure compensation settings provide exposure flexibility similar to manual adjustment of the f-stop settings on a DSLR camera.

Exposure Compensation can be to values in the range -3 to +3. A setting of 0 makes no adjustment to the automatic exposure setting. Negative settings adjust the exposure level down; positive settings adjust the exposure settings up.

Exposure Compensation is most useful under extreme lighting conditions.

On a very bright day, with the sun high in the sky, when shooting over snow or open water, the recorded scene may be too bright and may look washed out and lacking rich colors as a result. Adjusting Exposure Compensation down will reduce the exposure and can provide better color contrast and a richer look.

In this case, you might also choose Spot Exposure Metering so that if the sun gets into the top of the frame, it doesn't cause radical changes in the automatic metering.

On the other hand, if the sun is low in the sky and you are generally headed toward it, the sun may get nearer to the center of the frame, and when it does, it's brightness will override the rest of the scene, making everything else too dark. Setting Exposure Compensation to a higher level (even though this may seem backward) will provide better exposure for things in the foreground. The sun will be overexposed no matter what you do, so in this case you need to adjust for the things you want to see more clearly.

A bright sun snow scene may require -1 to -2 exposure compensation, whereas twilight/lowlight filming will require a setting in the +1 to +3 range.

Noise Filter

The Noise Filter can reduce the amount of noise—unwanted small spots or speckling—in the frame. Speckling is especially apparent when shooting in very low light which requires maximum exposure levels.

The Noise Filter is either on or off. When it is on it removes small specks and reduces larger ones on a frame by frame basis. The default is ON.

The Noise Filter is most appropriate when shooting in low light, especially if you are using Exposure Compensation to add exposure to the shot. Under those conditions, speckling can become intrusive.

Noise Filtering also increases the amount of footage that can be stored on a given SDHC card, because, by eliminated random spots of color, it makes it possible to achieve a high level of compression without reducing video quality.

Sharpener

The Sharpener enhances clarity by selectively increasing contrast along the edges of objects in the frame.

The Sharpener is either on or off. The default is ON.

Sharpening is most appropriate in lighting conditions that create a flat look to the frame because of lower than normal contrast. Gray overcast skies, deep shade, or indoors with indirect lighting can create this kind of situation.

Sharpening does not affect video compression, so the video file size will be roughly the same with sharpening turned on or turned off.

Sharpening should be turned off if you intend to edit the video on a computer after shooting because the adjustments made to the images by the sharpening process may interact poorly with other effects applied in later editing.

Image Quality

When captured video is saved to the SDHC card, the video data is compressed in order to significantly reduce the required amount of space on the card. The more that digital video is compressed the more likely it is that on playback a viewer may notice some loss of fine detail, general sharpness, or other effects.

Whether or not higher compression produces any noticeable effects depends upon on number of factors: what is being shot, lighting conditions, rapidity of movement, and other things. In addition, compression effects are much less likely to be noticed if the video is played back in a smaller format. If you play back your video in a window on a personal computer or downsize it for uploading to YouTube or some other sharing site, higher compression is much less of a consideration than if your target is play back on a large, full resolution HD television screen.

Higher compression is really only a consideration if you are shooting video that may overrun the capacity of your SDHC card.

The best way to determine what is for you the best tradeoff between file sizes and picture quality is to try it and see. Record some video at the default High setting and then some similar video using Medium. This testing will give the most reliable results if you do it under conditions that are like the conditions where you do most of your shooting.

The Very High setting is intended primarily for use by video professionals. Most personal computers may have difficulty playing back 16 Mbits/sec video. For most ordinary uses, 12 Mbits/sec will provide excellent HD video has a lower chance of creating playback difficulties.

SDHC card choices

The POV.HD captures high quality HD video and is capable of recording at a high bit rate. Because of this VIO recommends minimum SDHC card classes for use in the POV.HD. The class of an SDHC card should be printed on the card label, and should be on the SDHC card's packaging or catalog description.

The SDHC card class is normally displayed like this:

- For recording video at Image Quality levels up to High (12 Mbits/sec), use Class 6 or higher SDHC cards.

- For recording video at Image Quality levels up to Very High (16 Mbits/sec) use Class 10 or higher SDHC cards.

The POV.HD has been tested with SDHC cards from SanDisk and Lexar. Other brands with the appropriate class level should work as well, but have not been verified by VIO in this devlice.

Battery Choices

The POV.HD uses 4 AA batteries. Three types of batteries are suitable for use in the POV.HD.
- Standard alkaline disposable AA batteries
- NiMH rechargeable AA batteries
- Lithium disposable AA batteries

Each type of battery has advantages and disadvantages when used in the POV.HD. The best choice for you depends on how you use your camera, and you may find that you may want to use different batteries in differing situations.

Standard Alkaline Batteries

Standard alkaline AA batteries are widely available and relatively inexpensive. However, if you do a lot of shooting, the cost of disposable batteries can add up and all batteries require special handling for proper disposal.

The long shelf life makes standard batteries a good choice for that extra set stowed in the bottom of your bag for emergency use "some day".

NiMH Rechargeable Batteries

Even though they cost more to purchase, rechargeable batteries are overall much more cost effective than standard batteries, and using rechareables significantly reduces the number of batteries headed for the land fill—or hopefully recycling.

Rechargeable batteries do have some disadvantages though. Even when brand new, rechargeable batteries will give you slightly less recording time than standard batteries. Rechargeable batteries also lose their charge when left to sit for any length of time so ideally they need to be recharged right before you head out. And you do need to remember to recharge them. You cannot recharge batteries while they're in the POV.HD. Remember that set of standard batteries in the bottom of your bag for emergencies?

Lithium Batteries

Lithium batteries have one enormous advantage over the other types of batteries. They give you up to 5 hours of continuous recording time. If you want to record for more than 2 ½ hours and you won't have a chance to swap out the batteries, lithium batteries are your only choice.

If you're concerned about the weight of your load and won't have access to a way to recharge batteries in the wild, three sets of lithium batteries weigh only half as much as six sets of standard batteries, so again their long life makes them the obvious choice.

However, you pay for that extra recording time, and if there is no compelling reason to use lithiums, rechargeables, or rechargeables plus standard batteries for backup are probably the better choice.

There is another consideration when deciding about lithium batteries. Lithium batteries are not as easy to recycle, and have more environmental implications than their alkaline and rechargeable battery counterparts. Lithium batteries should always be disposed of properly, and not every place that accepts alkaline and NiMH batteries will accept lithium.

Compliance, Warranty, and Support

FCC Compliance

The POV.HD has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the POV.HD Recorder.
- Increase the separation between the POV.HD Recorder and receiver.
- Consult the dealer or an experienced radio/TV technician for help.

Limited Warranty and Disclaimer

V.I.O. warrants its Product against defects in material or workmanship for 1 year from date of purchase unless otherwise specified. V.I.O.'s Product warranty is limited to the replacement or repair of the defective item at no charge if we determine such item to be defective. If the Product unit is replaced, it will be replaced with a new or, at our option, refurbished Product unit. This limited warranty shall not apply to any Product item subject to misuse, including static discharge, failure by Buyer to follow instructions, product modification, ordinary wear and tear, negligent or improper operation, or which have been installed or soldered or altered during assembly or use and are not capable of being tested or resold. Modification, repair, or attempted repair of Product by anyone other than V.I.O. without the written permission of V.I.O. will void this limited warranty. V.I.O.'s limited warranty is also voided on any Product that is found to have an altered or tampered with serial number. Defective items must be shipped by Buyer to V.I.O. prepaid. V.I.O. will ship the return or replacement or refurbished Product item to the Buyer using UPS Ground services. If the Buyer shipped the item to V.I.O. using express services, V.I.O. will match the service level for the return. If Buyer wishes to have the item express shipped to them, V.I.O. will charge the Buyer for the upgraded shipping charges.

EXCEPT AS PROVIDED ABOVE, V.I.O. MAKES NO OTHER WARRANTY TO BUYER, EITHER EXPRESS OR IMPLIED. ANY IMPLIED WARRANTIES AGAINST INFRINGEMENT, OR WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED, EVEN IF V.I.O. HAS BEEN ADVISED OF SUCH A PURPOSE.

Return Policy

Any Product item, other than Special or Custom Orders, purchased from V.I.O. may be returned within thirty days of purchase for any reason for a refund, exchange, or credit towards another V.I.O. purchase. The returned items must be in original condition and packaging. All original warranties, instructions, and accessories must be accompanied by the original sales receipt. Return freight must be prepaid. No C.O.D. returns will be accepted. V.I.O. may refuse a refund or exchange or assess a charge for used or incomplete merchandise that is returned or exchanged. Items showing use or abuse will be returned by V.I.O. to Buyer. Returns or exchanges will not be made for items marked "as is" or "clearance." Refunds will be made by the same method as used to purchase the item. Refund checks may take up to 14 working days to process.

Return Merchandise Authorization

Return Merchandise Authorization ("RMA") policies are subject to revisions. Contact the RMA Department regarding policies and returns. All returned merchandise requires an RMA number. To obtain an RMA number, contact V.I.O. Customer Service (10am - 5pm EST Monday-Friday) at 906.226.9393. Your RMA number must be

clearly marked on the OUTSIDE of the returned package. Packages returned without this RMA number will be refused. Once the RMA number has been assigned, it is important to return the Product within two weeks, otherwise the RMA number will become void and the parcel will be refused. You must obtain a new RMA if you are unable to make delivery to our address within two weeks.

Obtaining Service and Technical Assistance

We want to make sure you have the best possible experience with the POV.HD; if you have any questions or need assistance feel free to contact us.

Our web site is: **www.vio-pov.com**

Contact us by phone at: 888.579.CAMS (2267)

Our email is: **customer.care@vio-inc.com**

Visit our Customer Care Blog: **http://community.vio-pov.com/customercare**

For news, videos, and other updates from V.I.O., please visit **www.theviovoice.com**